



esri



GIS |

Connecticut GIS Day 2010

Crowdsourcing and Community Maps

Don Cooke

Outline

- **Background on Volunteered Geographic Information (VGI)**
- **Examples:**
 - **Open Street Map**
 - **Navteq Map Reporter**
 - **Tele Atlas / TomTom**
 - **Google Maps**
- **The Issue of Authority**
- **Esri: Community Basemap**

Volunteered Geographic Information: VGI

- **VGI: A subset of UGC: User-Generated Content**
- **Mike Goodchild: “Citizens as Sensors: the World of Volunteered Geography”**
- **“Crowdsourcing”**
- **UGC: Wikipedia and Amazon**



WIKIPEDIA
The Free Encyclopedia

Main page
Contents
Featured content
Current events
Random article
Donate

Interaction
About Wikipedia
Community portal
Recent changes
Contact Wikipedia
Help

Toolbox
Print/export

Languages
Español

New features Log in / create account

Article Discussion

Read Edit View history

Search

Volunteered Geographic Information

From Wikipedia, the free encyclopedia



It has been suggested that this article or section be merged into *Collaborative mapping*. (Discuss)



This article **may document a neologism in such a manner as to promote it**. Please add **more reliable sources** to establish its current use and the impact the term has had on its field. Otherwise consider renaming or deleting the article.



This article **is missing citations or needs footnotes**. Please help add **inline citations** to guard against copyright violations and factual inaccuracies. (October 2008)

Volunteered Geographic Information (VGI) is the harnessing of tools to create, assemble, and disseminate geographic data provided voluntarily by individuals (Goodchild, 2007)^[1]. Some examples of this phenomenon are [Wikimapia](#), [OpenStreetMap](#), and [Google MyMaps](#). VGI can also be seen as an extension of critical and participatory approaches to [geographic information systems](#)^[2] and as a specific concern within online or web [credibility](#)^[3]. These sites provide general base map information and allow users to create their own content by marking locations where various events occurred or certain features exist, but aren't already shown on the base map.

VGI is a special case of the larger Web phenomenon known as [user-generated content](#)^[4].

References

[\[edit\]](#)

- [↑] Goodchild, M.F. (2007). Citizens as sensors: the world of volunteered geography. *GeoJournal*, 69(4):211-221
- [↑] Elwood, S. 2008. Volunteered Geographic Information: Future Research Directions Motivated by Critical, Participatory, and Feminist GIS. *GeoJournal* 72(3 & 4): 173-183.
- [↑] Flanagan, A. J., & Metzger, M. J. (2008). The credibility of volunteered geographic information. *GeoJournal*, 72, 137-148.
- [↑] Graham, M. 2010. Neogeography and the Palimpsests of Place. *Tijdschrift voor Economische en Sociale Geografie*. 101(4), 422-436.

Categories: [Cartography](#) | [Collaborative mapping](#) | [Sexually transmitted diseases and infections](#)



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Search

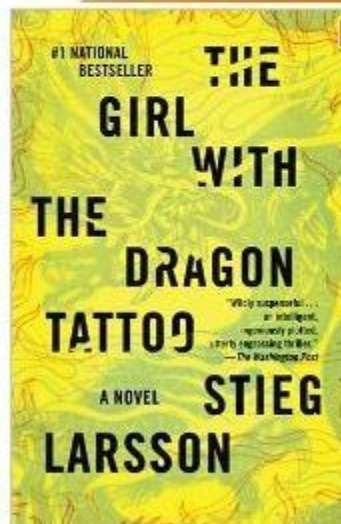
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[The Girl with the Dragon Tattoo](#) and over 700,000 other books are available for **Amazon Kindle** – Amazon's new [more](#)

Click to **LOOK INSIDE!**

The Girl with the Dragon Tattoo [Paperback]

[Stieg Larsson](#) ☒ (Author), [Reg Keeland](#) (Translator)★★★★☆ ☒ (2,048 customer reviews)List Price: ~~\$14.95~~

Customer Reviews

2,048 Reviews

5 star:		(885)
4 star:		(483)
3 star:		(229)
2 star:		(194)
1 star:		(257)

Average Customer Review

★★★★☆ (2,048 customer reviews)

Most Helpful Customer Reviews

1,657 of 1,762 people found the following review helpful:

★★★★★ **This Swedish bestseller deserves to be a blockbuster here too.,**
August 25, 2008

By [K. M. "literary devotee"](#) ☒ (California) - [See all my reviews](#)

VINE™ VOICE

TOP 100 REVIEWER

This review is from: [The Girl with the Dragon Tattoo \(Hardcover\)](#)

A 24-year-old computer hacker sporting an assortment of tattoos and body piercings and afflicted with Asperger Syndrome or something of the like has been under state guardianship in her native Sweden since she was thirteen. She

Open Street Map: OSM

- **Reaction to Great Britain Ordinance Survey “Crown Copyright”**
- **Very successful in Europe**
- **Great contribution in Haiti following the January earthquake**
- **But outcome in USA remains to be seen**

OpenStreetMap



The Free Wiki World Map

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Search [Where am I?](#)

examples: 'Alkmaar', 'Regent Street, Cambridge', 'CB2 5AQ', or 'post offices near Lünen'
[more examples...](#)

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[View](#)

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[History](#)

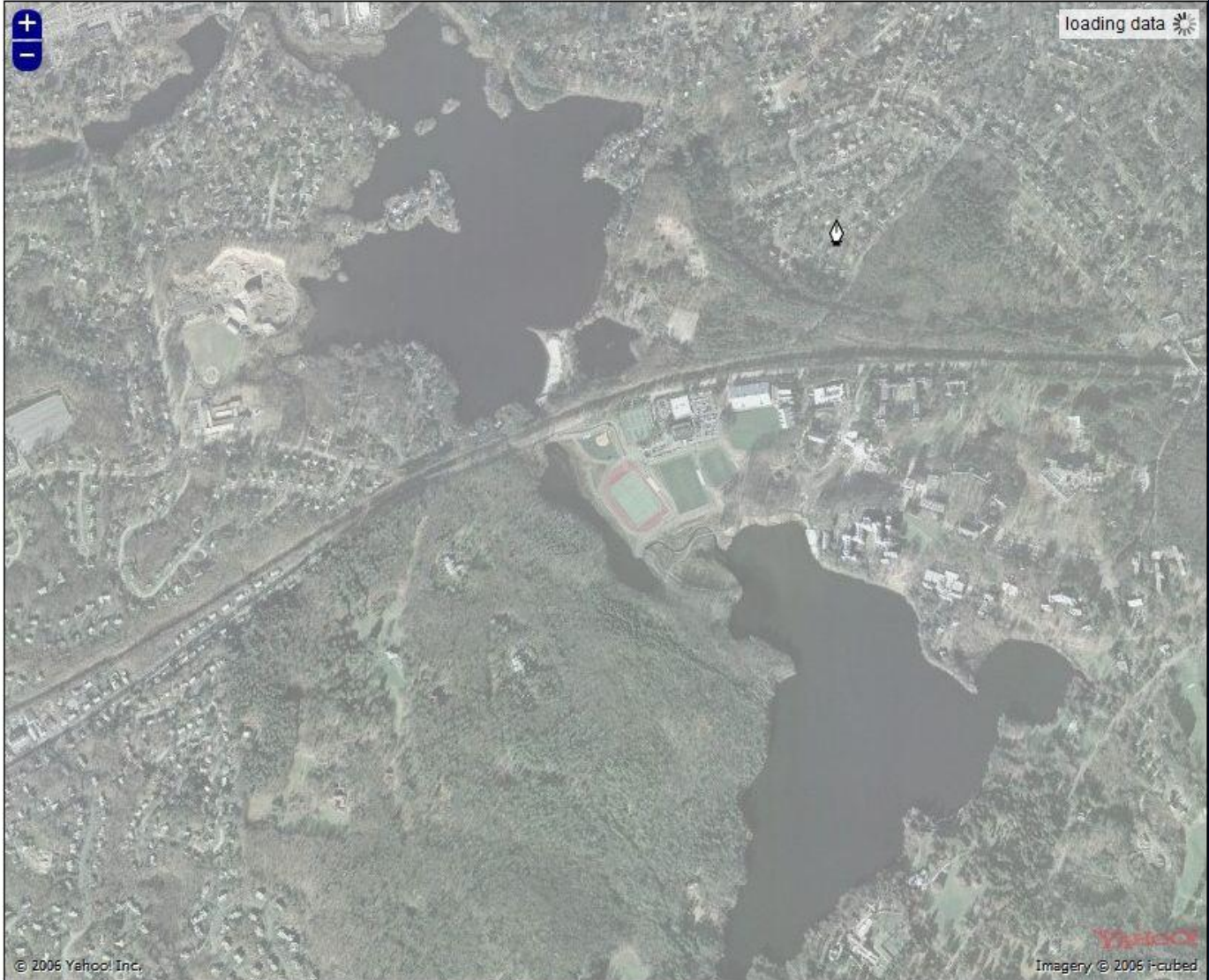
[Export](#)

[GPS Traces](#)

[User Diaries](#)

Welcome, doncooke | [home](#) | [inbox \(0\)](#) | [logout](#)

loading data



© 2006 Yahoo! Inc.

Imagery © 2006 i-cubed

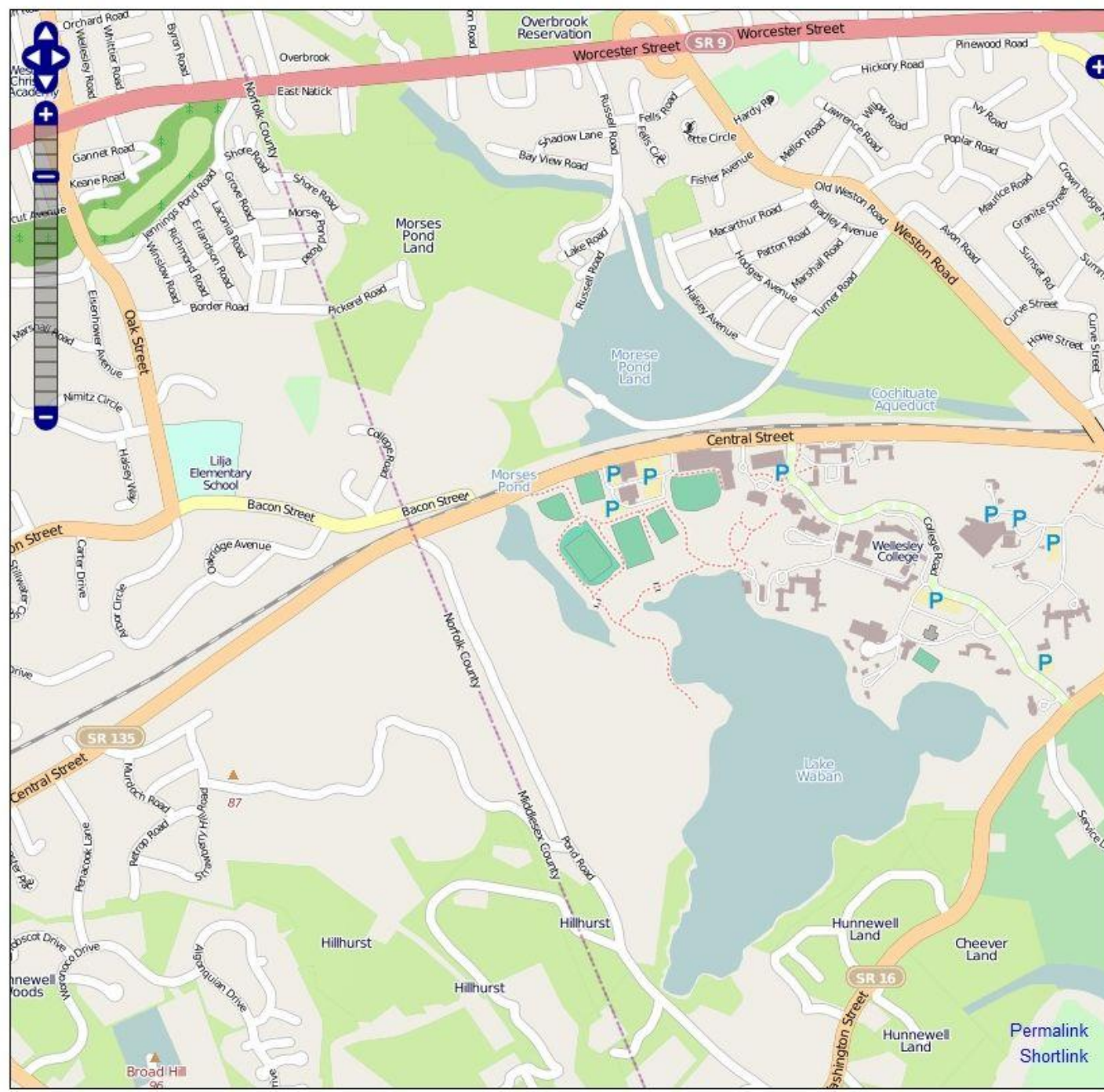


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Search [Where am I?](#)

examples: 'Alkmaar', 'Regent Street, Cambridge', 'CB2 5AQ',
or 'post offices near Lünen'
[more examples...](#)

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OpenStreetMap



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examples: 'Alkmaar', 'Regent Street, Cambridge', 'CB2 5AQ', or 'post offices near Lünen'
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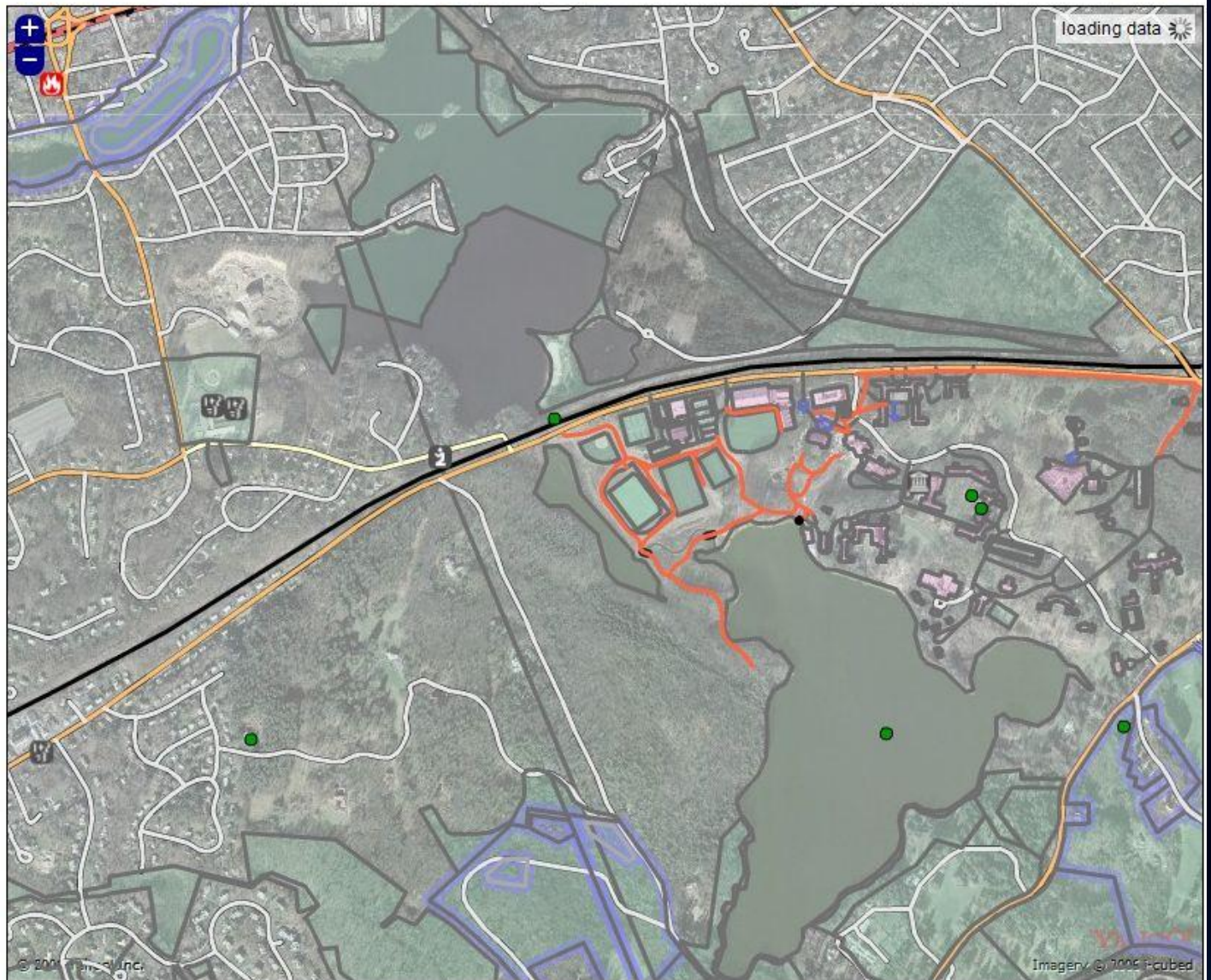
[History](#)

[Export](#)

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Welcome, [doncooke](#) | [home](#) | [inbox \(0\)](#) | [logout](#)



Open Street Map: Adding a Street in Port-au-Prince, Haiti

OpenStreetMap

port au prince - Google Maps

View Edit History Export GPS Traces User Diaries

Welcome, doncooke | home | inbox (0) | log

OpenStreetMap

Free Wiki World Map

Map & Wiki
News blog
Map

Search Where am I?
Go

Examples: 'Alkmaar', 'Regent', 'Cambridge', 'CB2 5AQ', 'Post offices near Lünen'
examples...

Make a Donation

SOME RIGHTS RESERVED

My Street

Potlatch 1.1a Drag and drop points of interest


Airport	Bus stop	Ferry	Parking	Rail station	Taxi rank	Bar
Cafe	Cinema	Fast food	Pub	Restaurant	Theatre	Convenience store
Hotel	Pharmacy	Postbox	Recycling	Supermarket	Telephone	Fire station
Hospital	Police station	Place of worship	Museum	School		

Help

Editing offline

Save

Open Street Map: Adding a Street in Port-au-Prince, Haiti



The Free Wiki World Map

OpenStreetMap is a free editable map of the whole world. It is made by people like you.

OpenStreetMap allows you to view, edit and use geographical data in a collaborative way from anywhere on Earth.


OpenStreetMap's hosting is kindly supported by the UCL VR Centre and bytemark.

Help & Wiki
News blog
Shop
Map key

Search [Where am I?](#)

examples: 'Alkmaar', 'Regent Street, Cambridge', 'CB2 5AQ', or 'post offices near Lünen'
[more examples...](#)

[Make a Donation](#)



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[View](#)[Edit](#)[History](#)[Export](#)[GPS Traces](#)[User Diaries](#)

Data [Close](#)

Manually select a different area

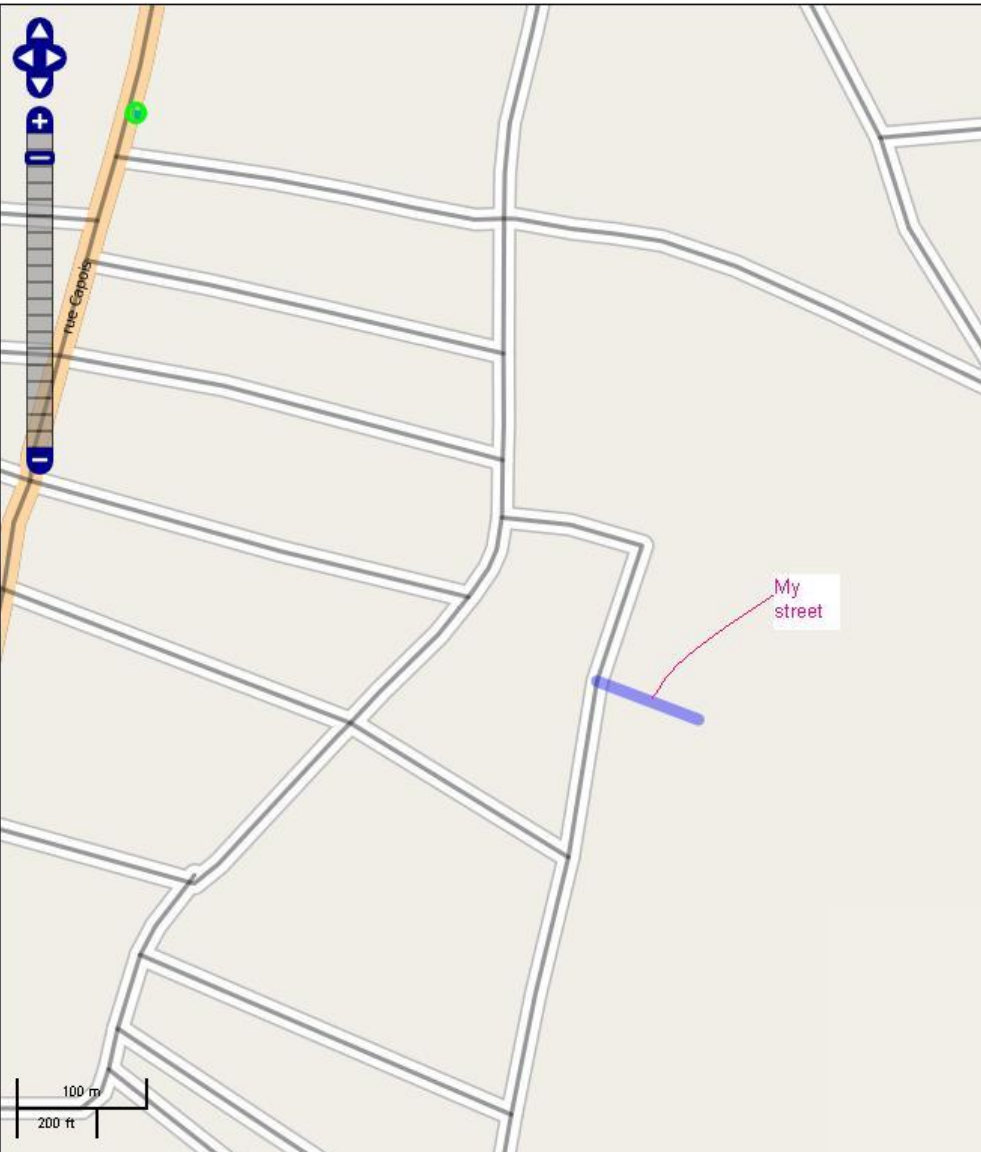

Display object list

Way 38332691 [Details](#)

- **unclassified road**: yes

History for Way 38332691 [Details](#)

- Edited by doncooke at 2009-07-31T20:04:52Z



Navteq Map Reporter

The screenshot shows the Navteq Map Reporter web application. At the top, there is a search bar with the text "(enter as much of address as known)" and a "Find" button. A checkbox labeled "include POIs in search results" is checked. Below the search bar is a navigation toolbar with icons for home, previous, next, and other map functions. The map itself shows a network of roads, including Weston Rd and Amherst Ave. A location marker is placed on Weston Rd, and a pop-up box displays the following information:

Andrews Pharmacy Weston Road
324 Weston Rd
02482 Wellesley, Town Of
+1 (781) 2351250
(Health)

At the bottom left, there is a scale bar indicating 20 meters and a copyright notice: "© 2009, NAVTEQ, Europa Technologies". At the bottom right, there is another copyright notice: "© 2009, NAVTEQ, Europa Technologies" and the NAVTEQ MAPS logo. Below the map, there is a section titled "INSTRUCTIONS:" with five numbered steps (A) through (E) describing the process of reporting a location update. Below the instructions is a section titled "2. Type of feedback" with a note about the support section and Map Store.

Country
World Map
(enter as much of address as known) Find ☒ include POIs in search results

Map Hybrid Satellite

20 m

NAVTEQ MAPS © 2009, NAVTEQ, Europa Technologies

Map: Static | **Interactive**

INSTRUCTIONS:

- (A) Complete the address form located above the map in step 1.
- (B) Choose the best match from the results screen to mark the location of your update request.
- (C) If there is no appropriate match, either (1) re-enter with more detail or (2) zoom in on the map to the desired location and click the link directly below the search results to place a marker on the map.
- (D) Move the marker to your desired location.
- (E) Complete the details below the map in steps 2-4 and submit.

2. Type of feedback

(If your request appears correctly in our map above, see our [support section](#) for help or our [Map Store](#) to update your map.)

Navteq Map Reporter

☒ Address

☒ Road and Road Feature

☒ Point of Interest (POI) (bank, store, etc.)

✖ To change a POI's details, click on that POI icon within map and click Report Change
(I can't find the POI on the map, but it's on my "Device" - To report update / change, click here)

Business Owners: [See our Direct Access program](#) to regularly keep your POIs up-to-date

☐ POI is missing

☒ POI has incorrect details (location, category, phone number, etc.)

☐ POI should be removed

POI Name

POI Category

POI Phone

Street

Postal

City, State

Country

Comments

Select category only when you add new POI ▾

326 Weston Rd

02482

Wellesley, Town Of, MA

United States ▾

☒ Traffic Restriction

☐ Other

3. Attachment
Attach a supporting document or image. Max file size: 3 MB

Browse...

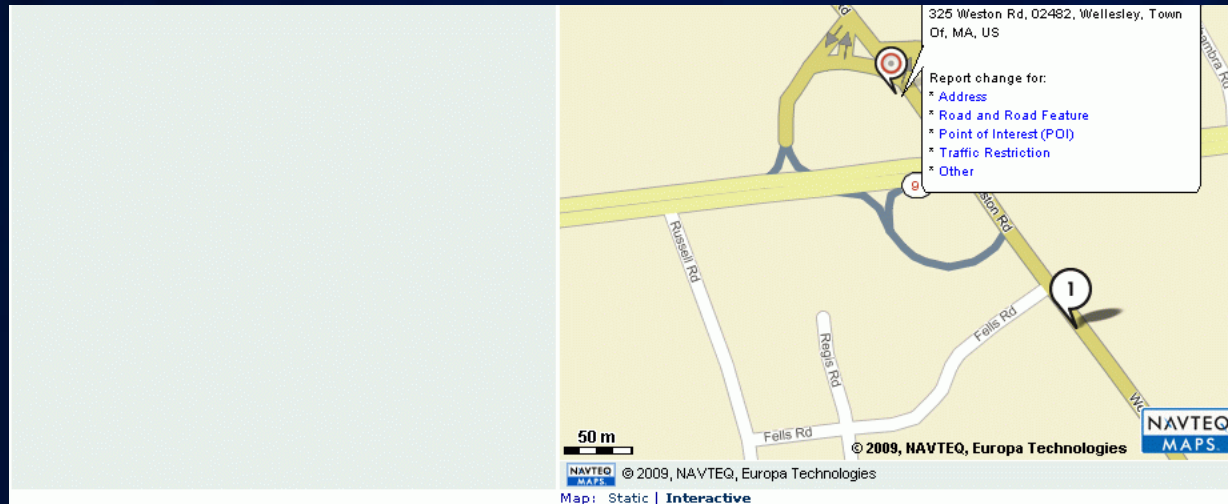
4. What map or system were you using? (e.g. your car, website, etc.)

Browse...

5. Enter your email.
Please enter your email to receive status notifications.

Submit

Navteq Map Reporter



INSTRUCTIONS:

- (A) Complete the address form located above the map in step 1.
- (B) Choose the best match from the results screen to mark the location of your update request.
- (C) If there is no appropriate match, either (1) re-enter with more detail or (2) zoom in on the map to the desired location and click the link directly below the search results to place a marker on the map.
- (D) Move the marker to your desired location.
- (E) Complete the details below the map in steps 2-4 and submit.

2. Type of feedback

(If your request appears correctly in our map above, see our [support section](#) for help or our [Map Store](#) to update your map.)

Choose from list:

☒ Address

☒ Location marked on map.

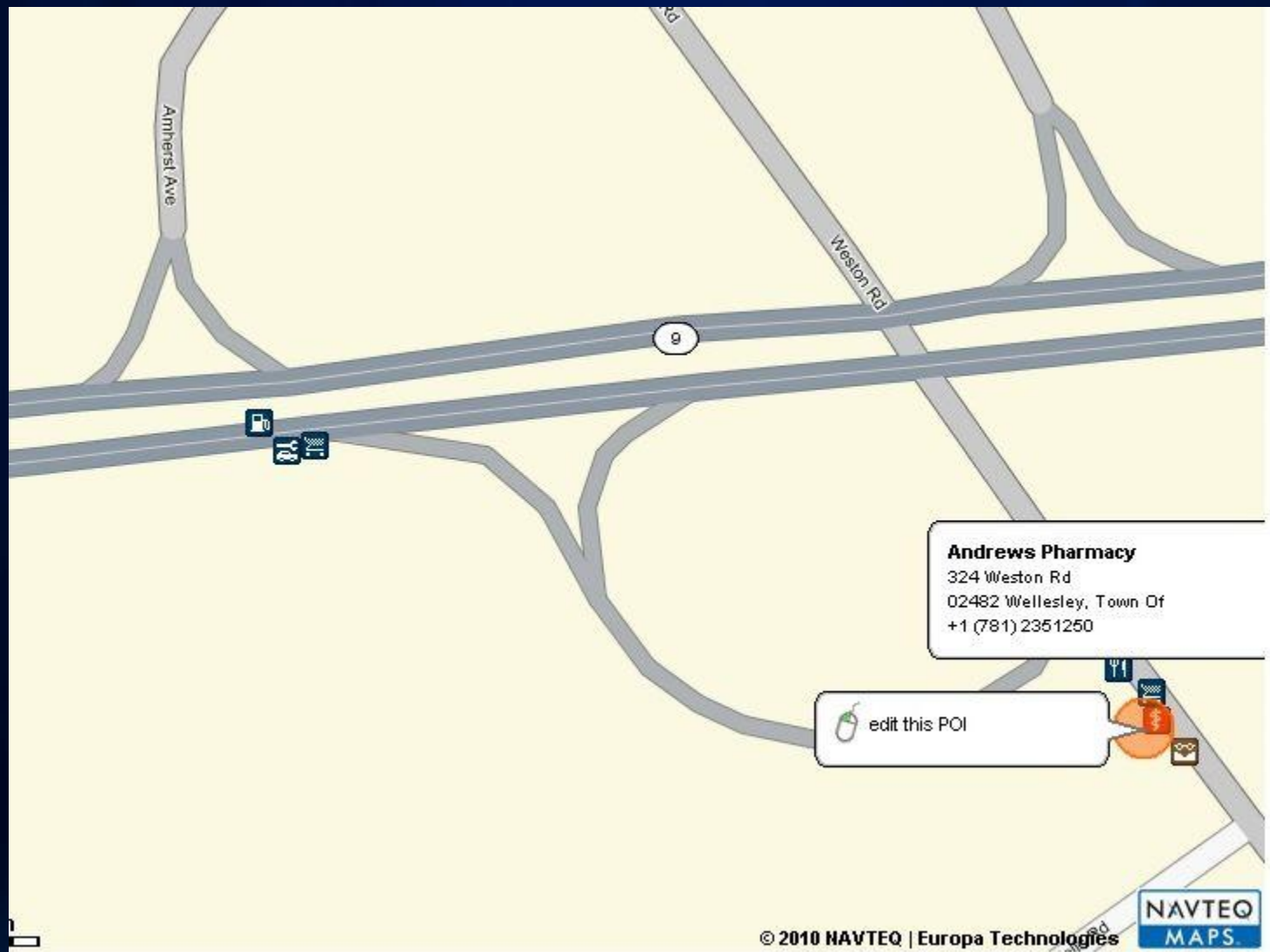
☐ address is missing

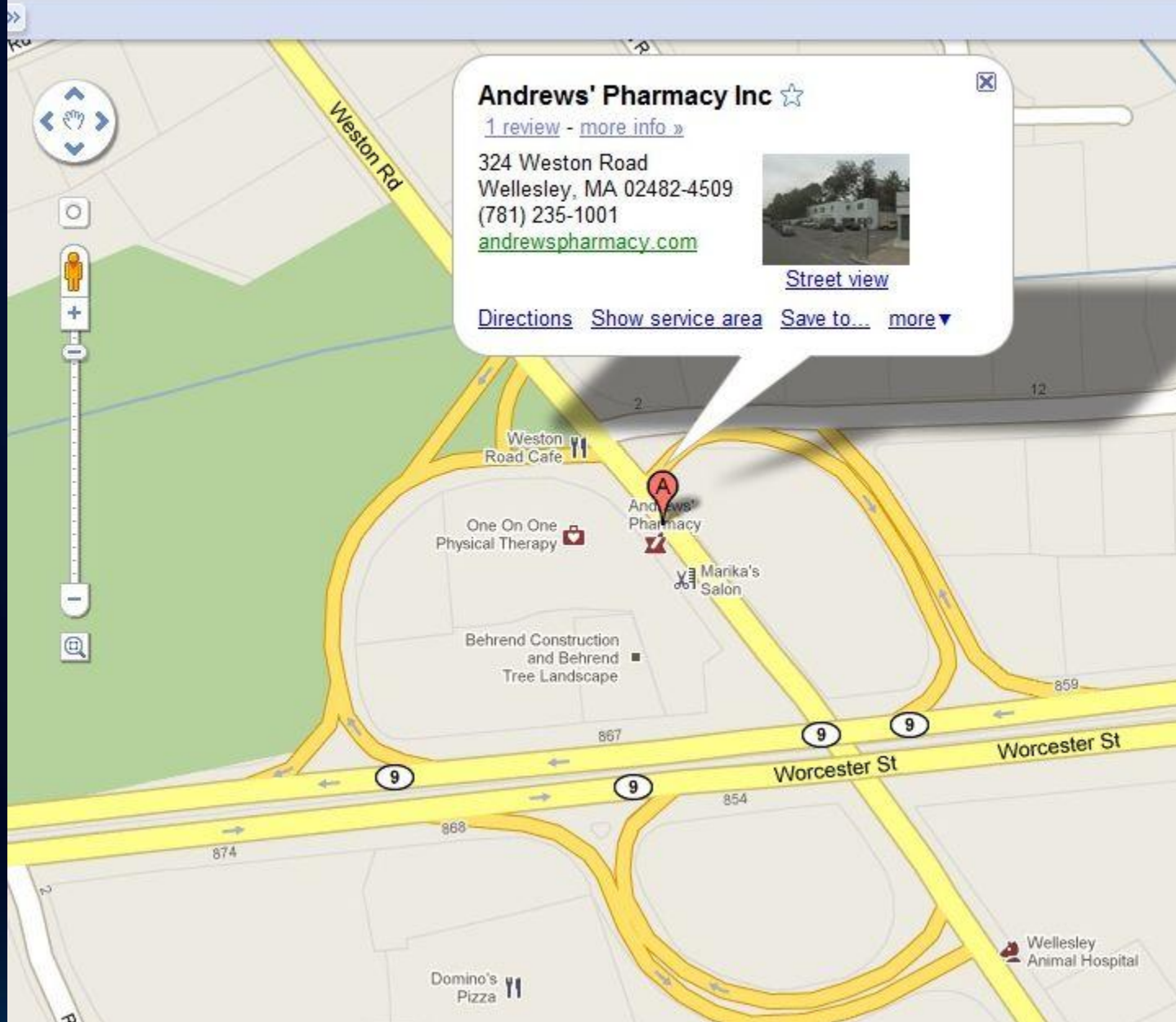
☐ address appears in the wrong location

☐ address should be removed

Street	325 Weston Rd
Postal	02482
City, State	Wellesley, Town Of MA
Country	United States
Comments	

Navteq Map Reporter





Tele Atlas and TomTom

- MapInsight: Tele Atlas; browser-based
- MapShare: TomTom; PNAV-based
- Active VGI vs. Passive VGI

Tele Atlas and TomTom

EN DE FR NL IT ES SV [FAQ](#) → [Demo](#) →

Thank you!

Thank you for your feedback.

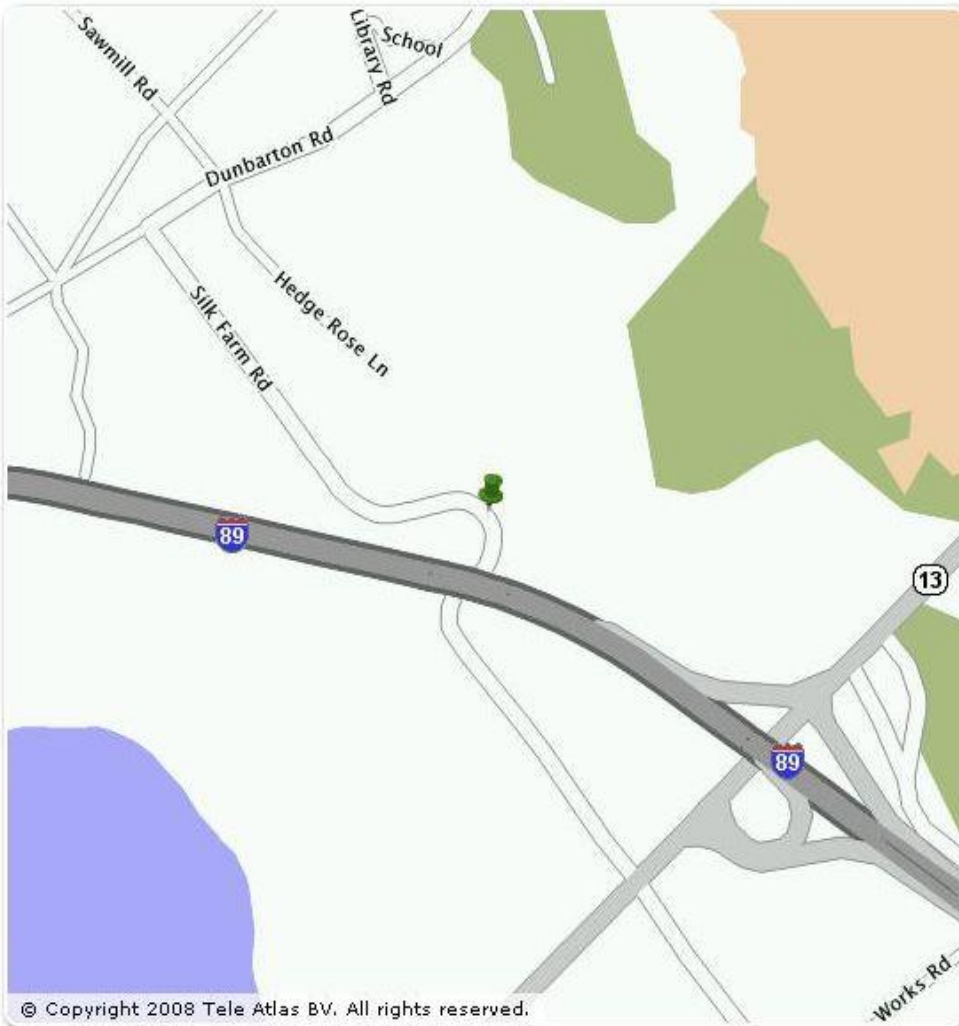
Your personal tracking number for future reference:

bef892ab-6ac9-102c-9497-5adf54062195

If you entered your email address, you will also receive this information by email.

[What happens to my report now? →](#)

[SUBMIT ANOTHER REPORT](#)





Home Products Maps

Route Planner

Link

Plan a route

Find a location

From:

To:

Traffic: ☐ Minimise delays

Leave:

Reverse

Clear route

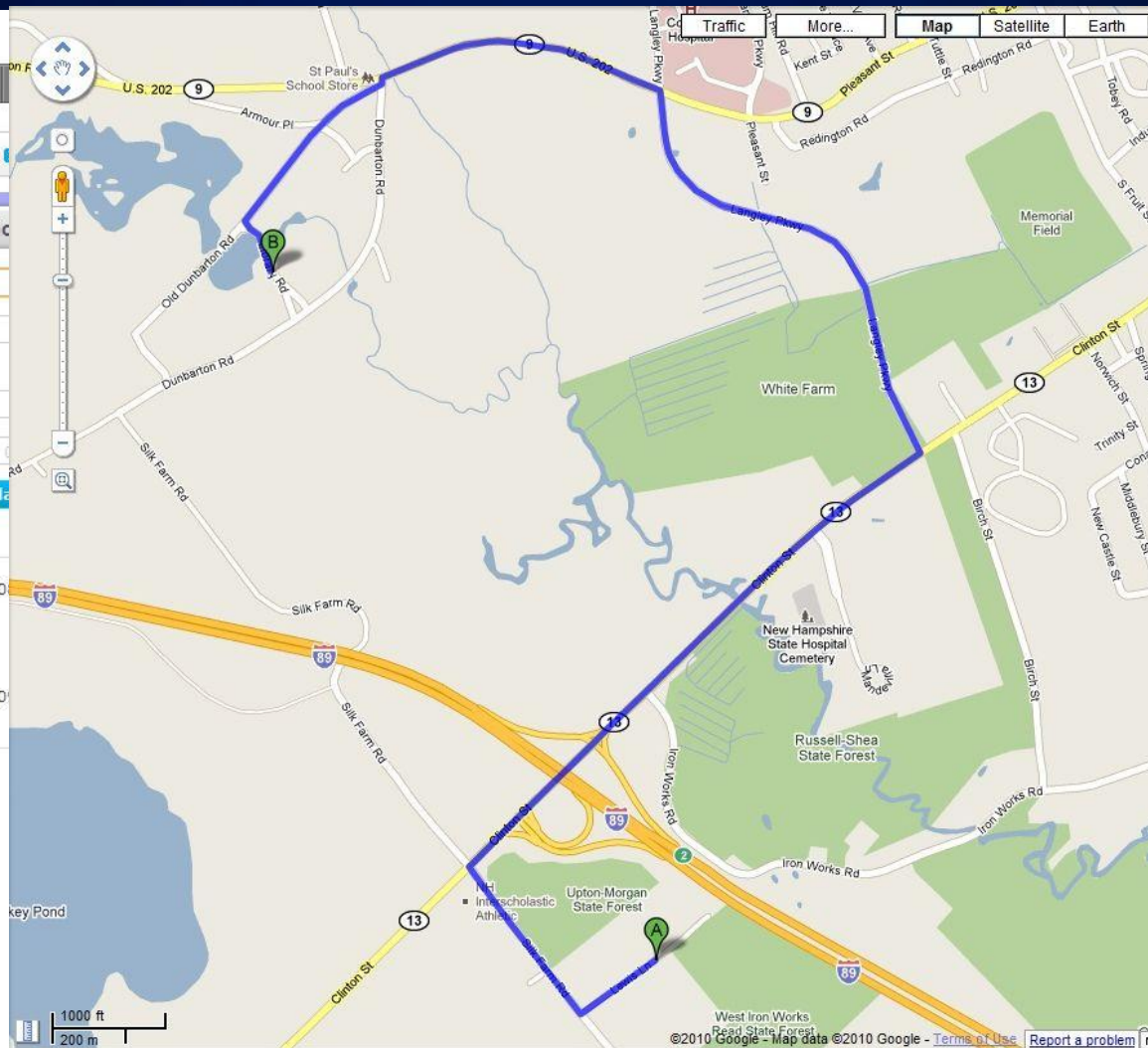
Plan

[Show driving directions](#)

Leave now from **Lewis Ln, Bow NH**

2.1 mi - 5 min.
Includes traffic delay: 0 min.

Arrive today at **Builders Sq, Concord NH**



Google Maps: Google Map Maker, Iceland

Google Map Maker interface showing a map of Reykjavik, Iceland. The search bar contains "iceland". The map displays various streets, landmarks, and a scale bar (200 ft / 50 m).

Search Results: **iceland**
Category: Country
Edit

Results from the last 'search' or 'find'. [Learn more](#)
[Get Directions](#)

Results 1 - 1 of about 1 for **iceland**

Map | Satellite | Hybrid

Contributed by [ams](#), [Einar Naldi](#) and others.
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Google Maps: Haiti, in progress

Google maps [Show search options](#)
Find businesses, addresses and places of interest. [Learn more.](#)

[Get Directions](#) [My Maps](#) [Print](#) [Send](#) [Link](#)

Port-au-Prince ☆
Haiti
[Explore this area »](#)

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Places
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[From Delmas to Croix-Des-Bouquets ...](#)
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Hotels starting at \$49
Compare multiple sites and save
[www.travelalerts.ca](#)

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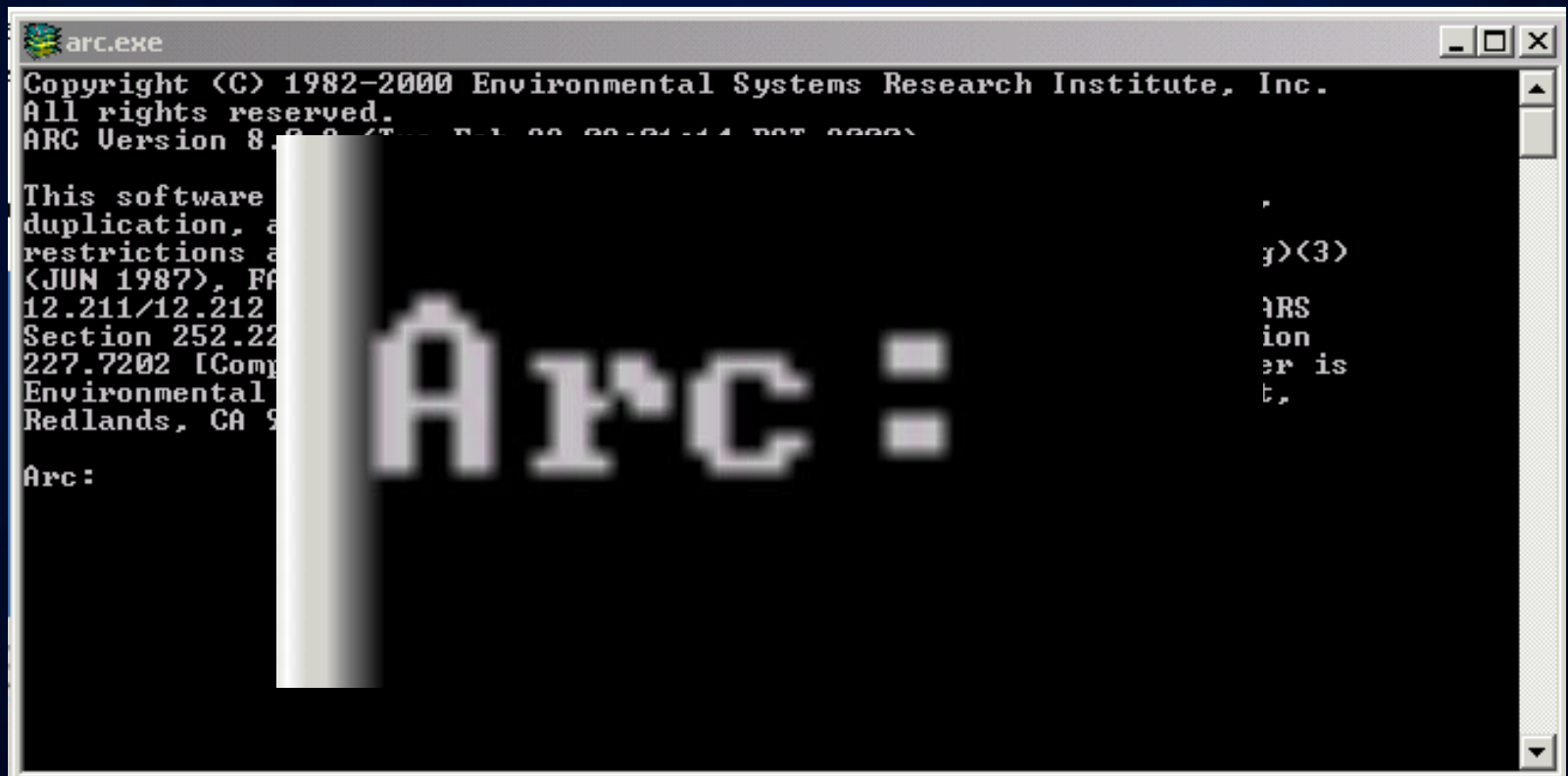
[illegible]

Google Maps

Authority

- **Authority is the key issue in VGI**
- **When does the crowd become authoritative?**
- **Anecdote: Spoofing TomTom**

Community Basemap Program: Historical Context

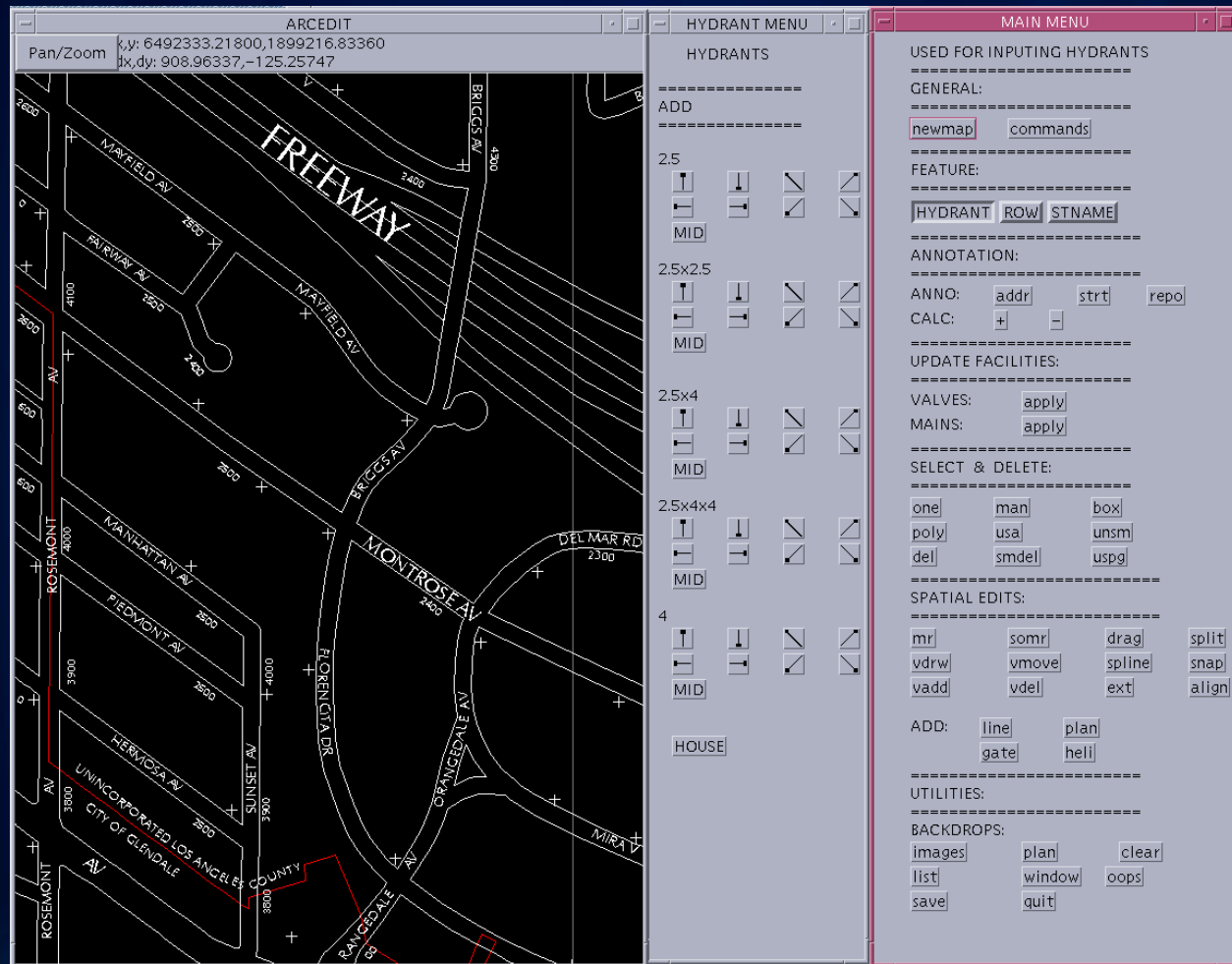


Arc Info, 1982

Historical Context

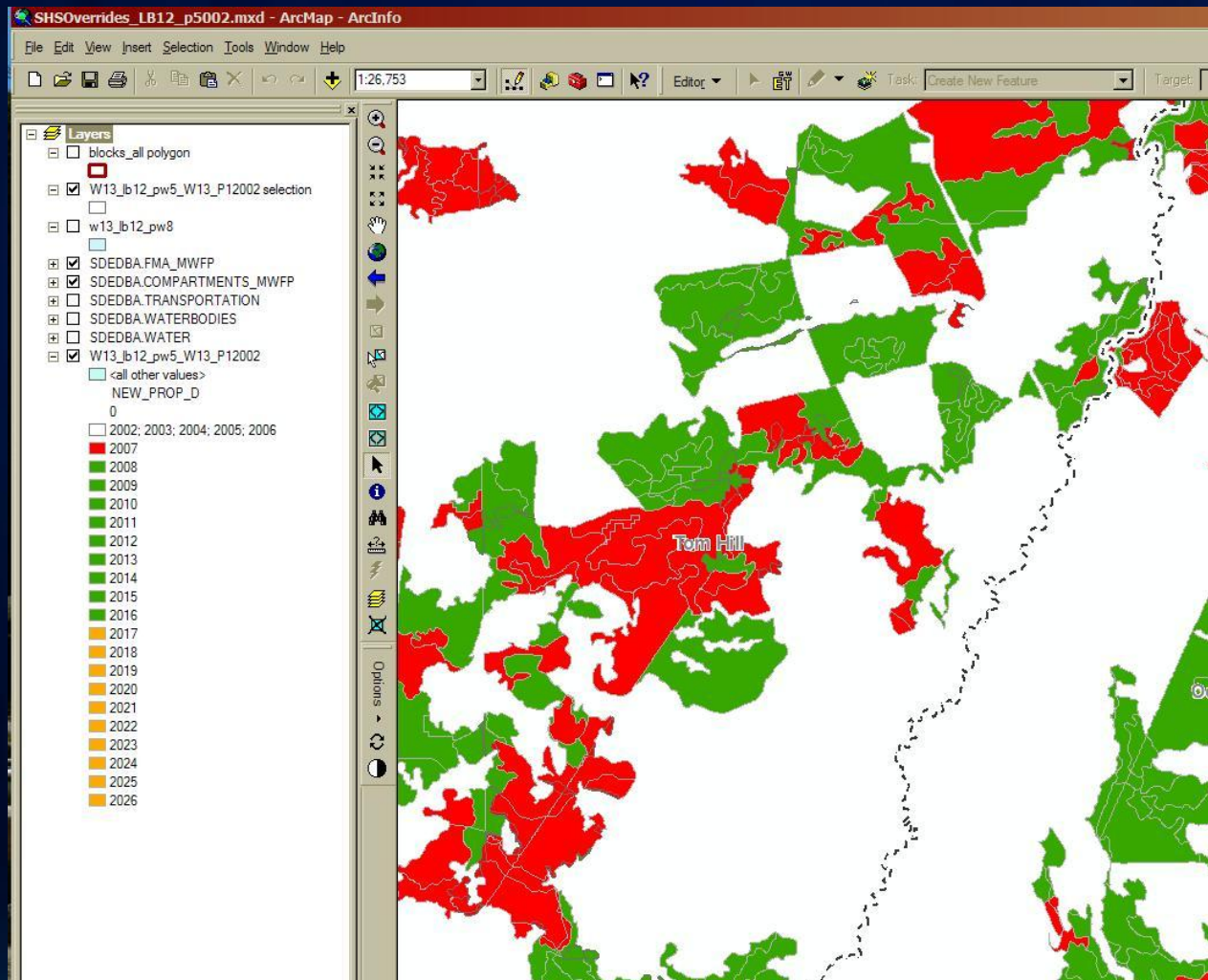
- **The ArcInfo era:**
- **1980s and 1990s**
- **Map digitizing**
- **Before: paper and mylar**
- **After: Shapefiles and GeoDatabases**
- **Application development: AML (Arc Macro Language)**

Historical Context



AML Application to streamline GIS database production

Historical Context

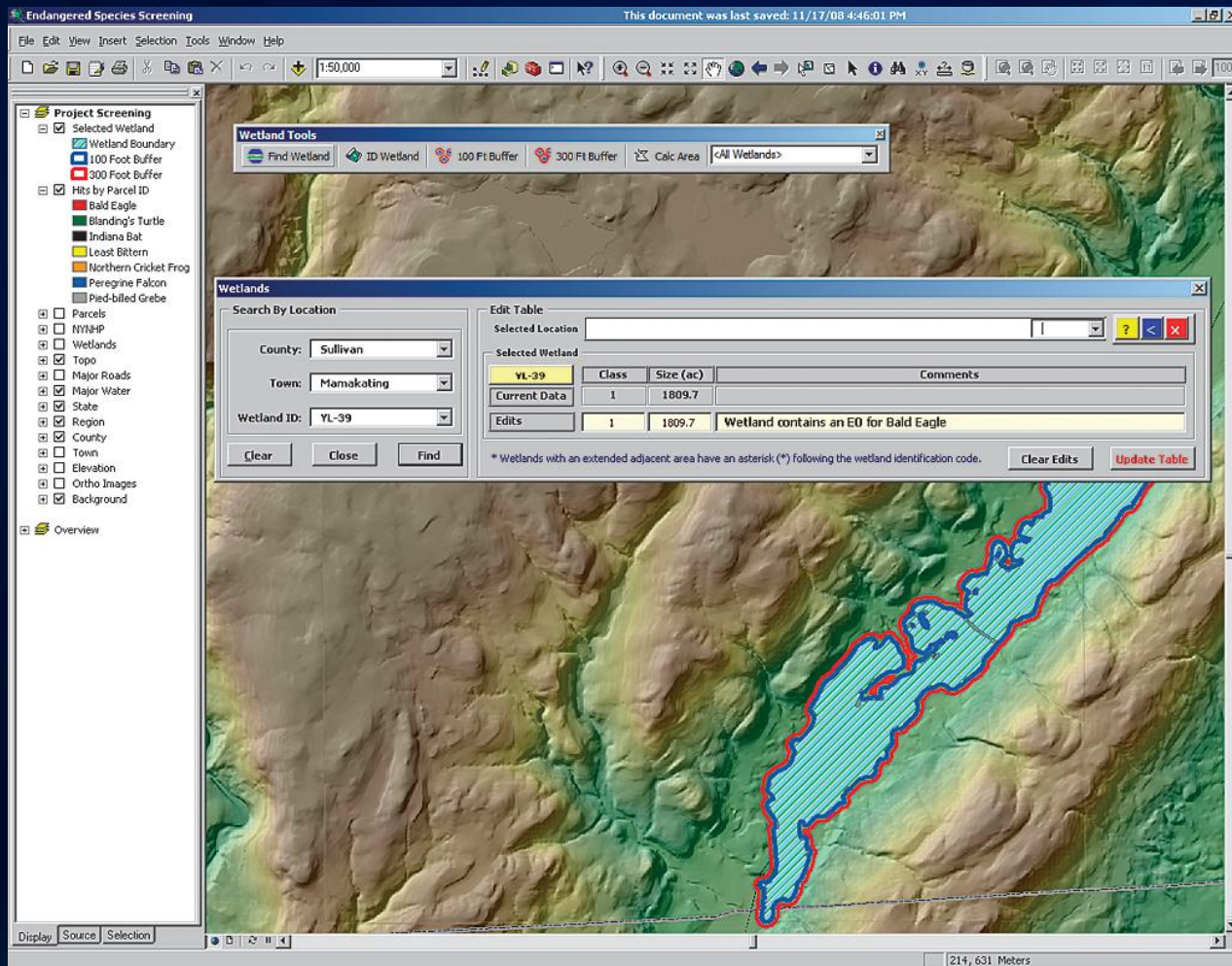


Arc GIS, 1999

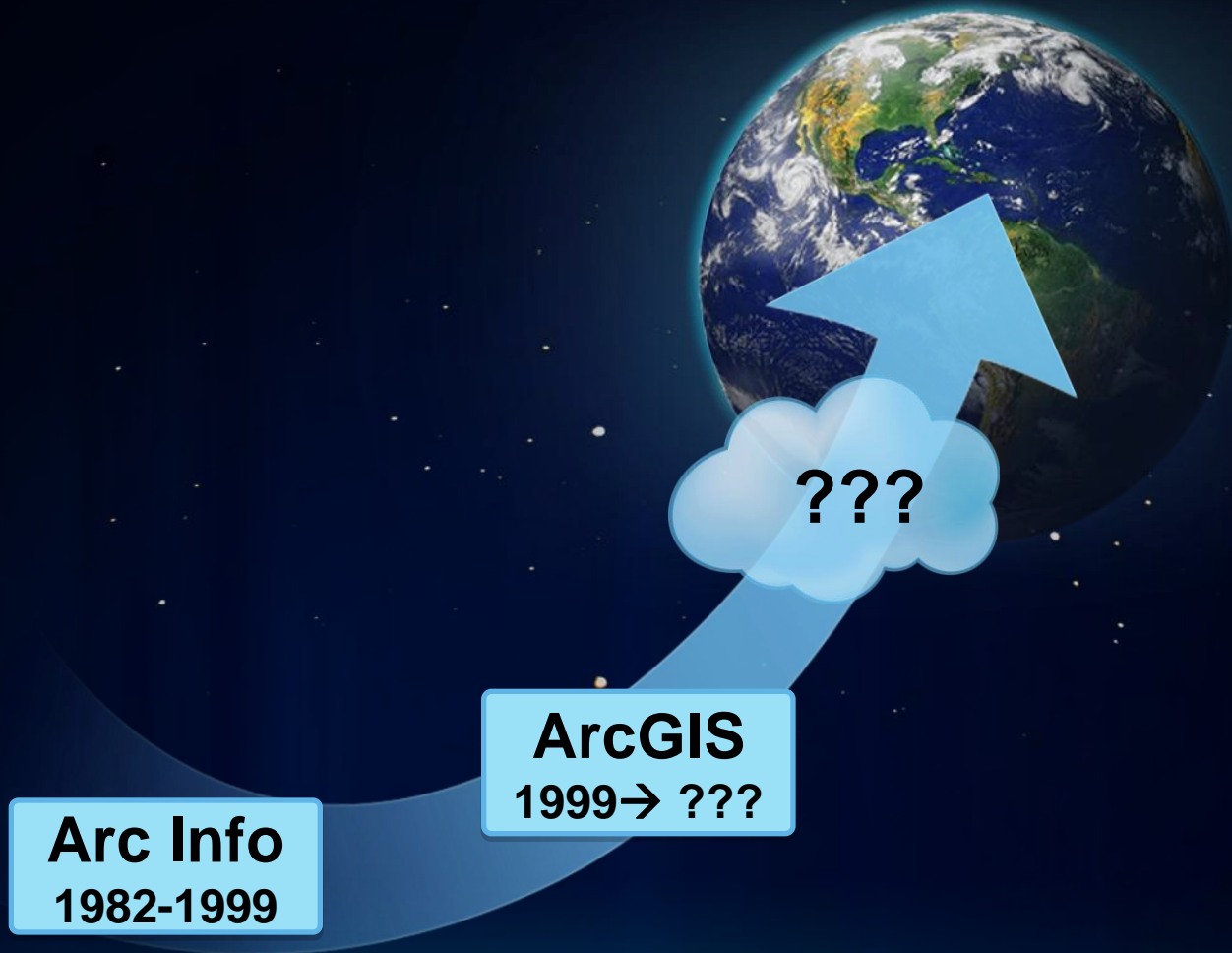
Historical Context

- **The ArcGIS era:**
 - **2000 to present (and future)**
 - **Map Digitizing is mostly finished**
 - **Before: Shapefiles and GeoDatabases**
 - **After: Shapefiles and GeoDatabases**
 - **Application Development: ArcObjects, VBA, Python**

Historical Context



What's the Next Step?

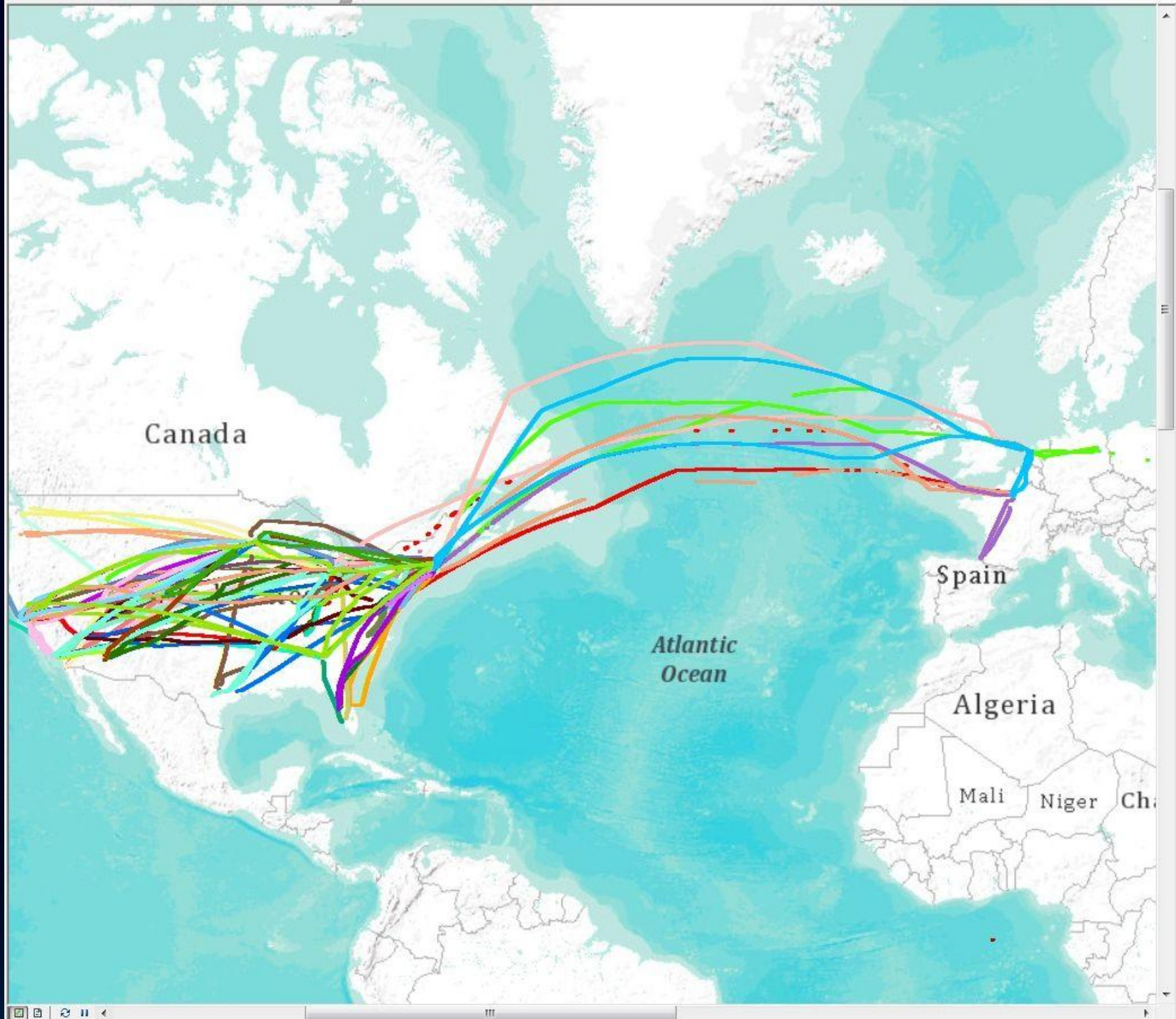


Trends since ArcGIS (1999)

- **Microsoft and Google join MapQuest on the Web**
- **Neogeography , VGI, Web2.0**
- **Cloud Computing**
- **The iPhone and the iTunes Store**

Community Basemaps at Esri

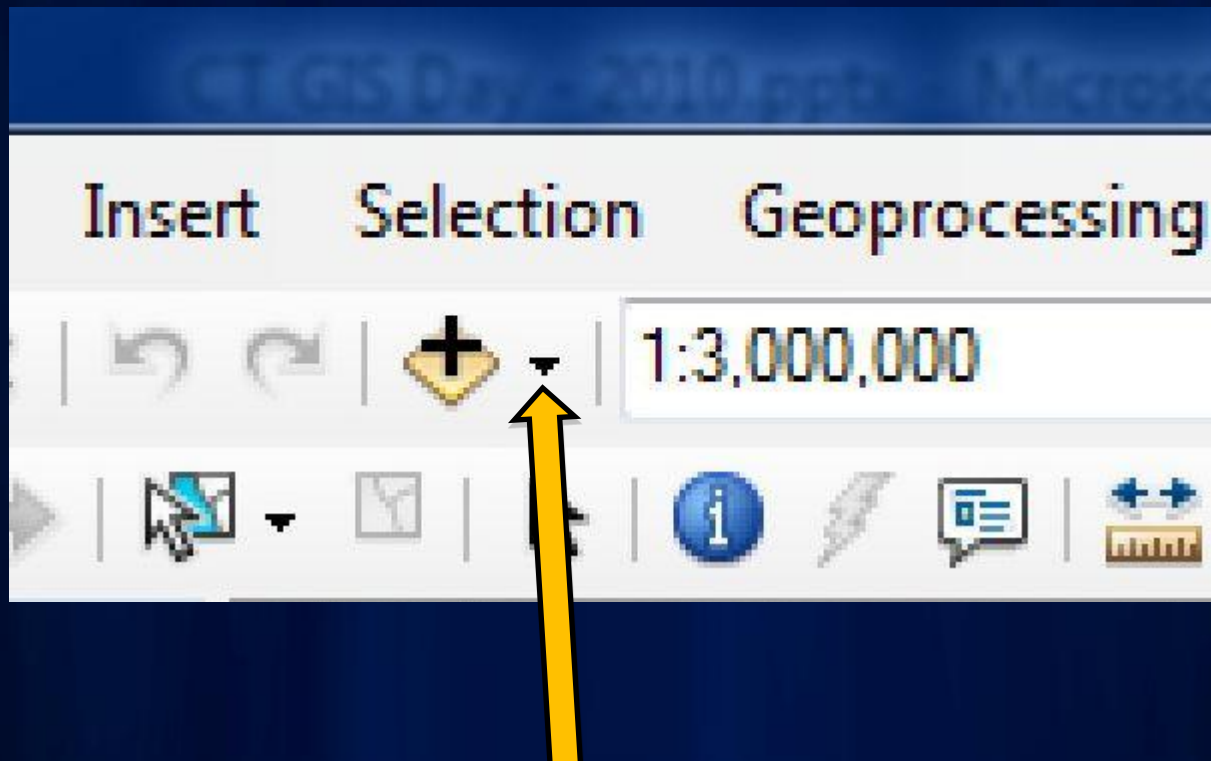
- **Why I like Basemaps**



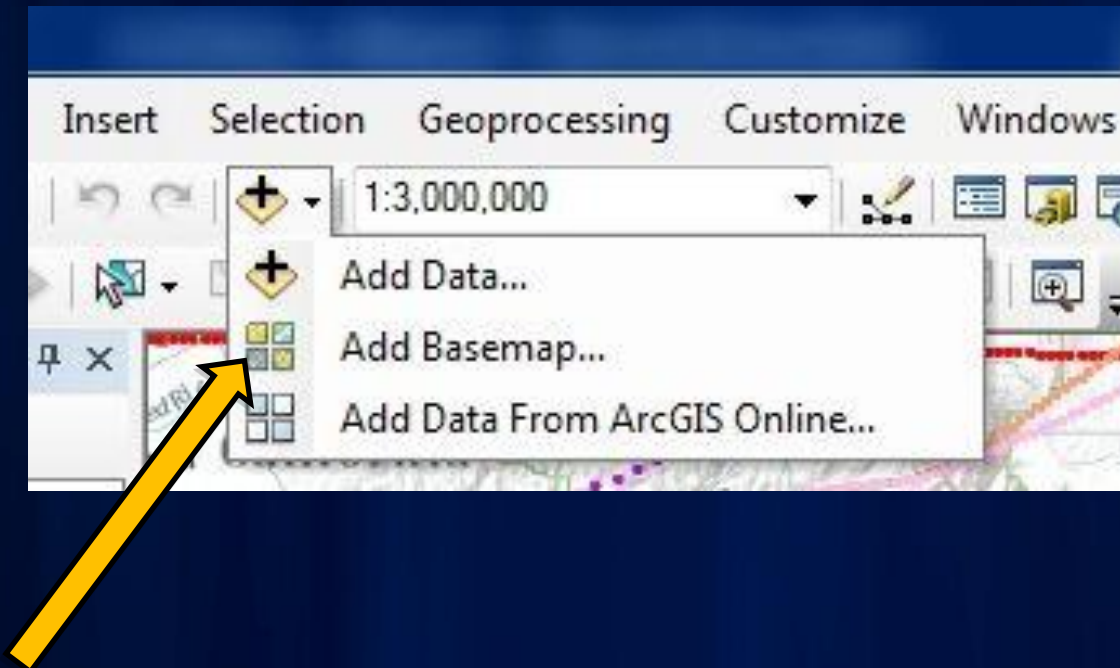
Add Data



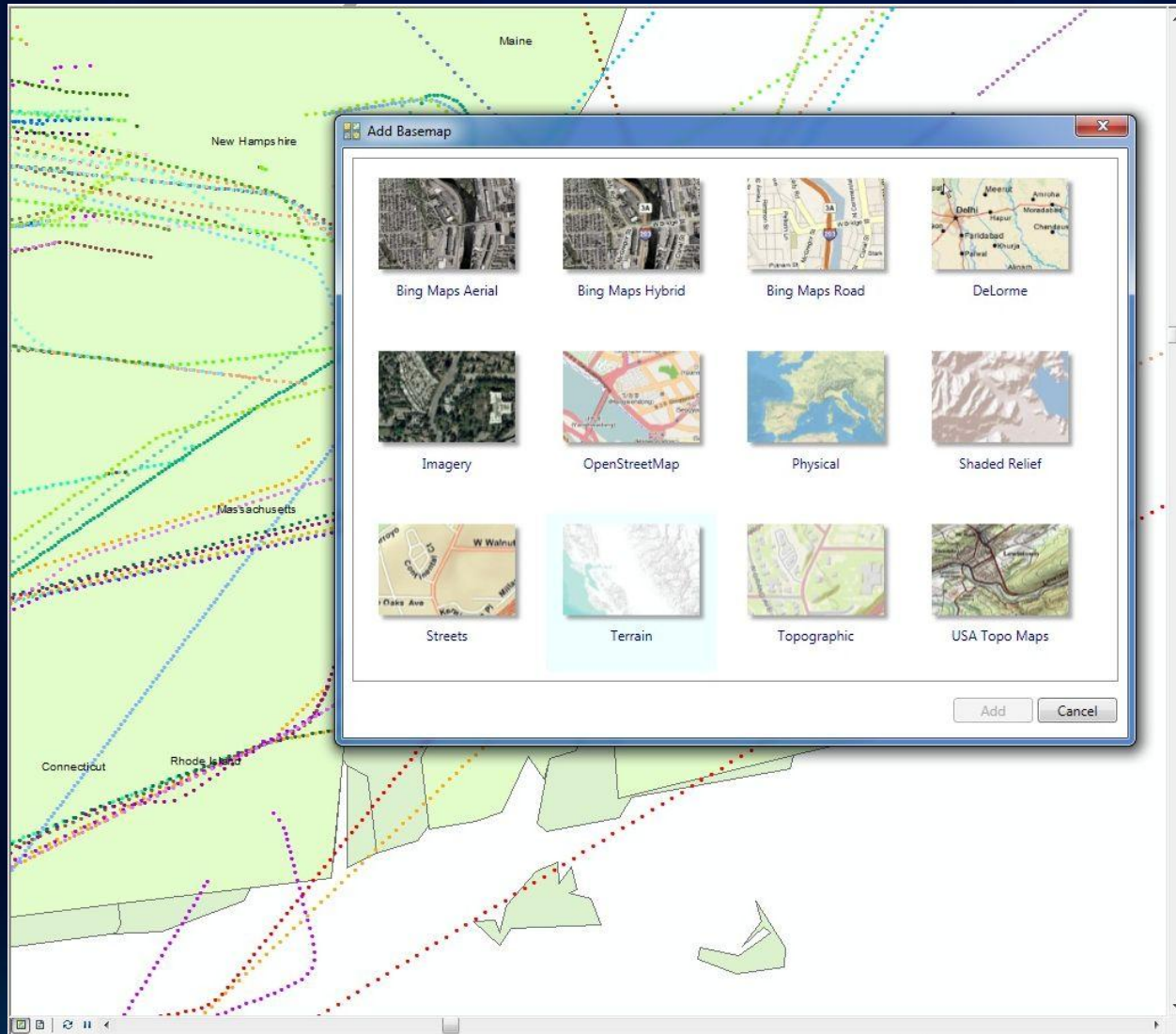
Add Data

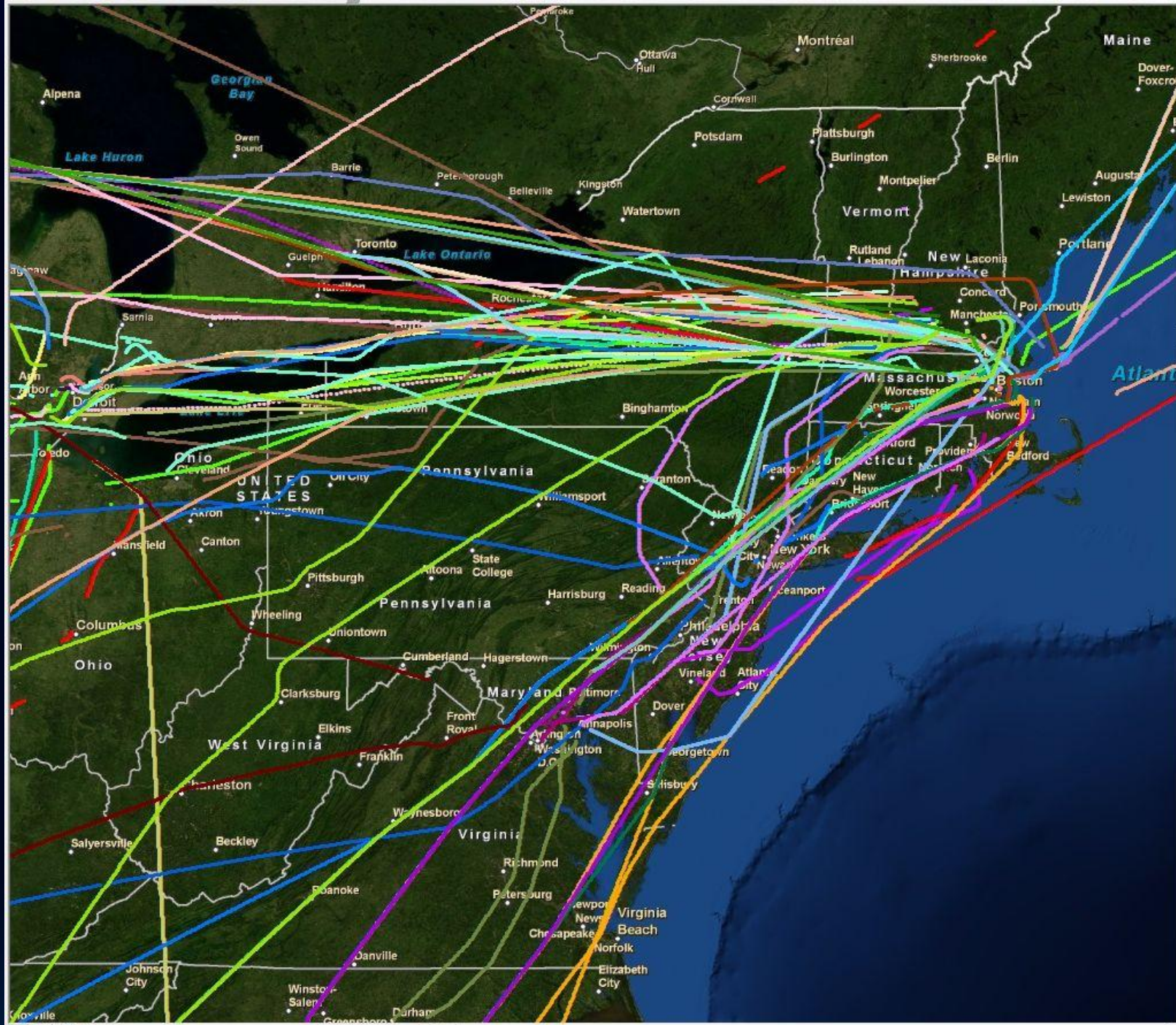


Add Basemap



Add Basemap





ArcGIS 10

- ArcGIS 10 is totally web-enabled
- Emphasis on content more than ever before
- www.ArcGIS.com
- “Maps and Apps”




ArcGIS

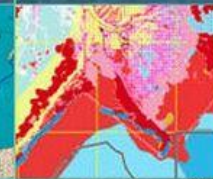
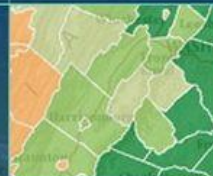
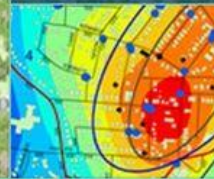
GALLERY

MAP

GROUPS

MY CONTENT

Find maps, applications and more... 



ArcGIS Online

Maps and Apps for Everyone

View the Gallery

See maps and apps from people and organizations worldwide.

View Groups

Work together with the people who share your interest.

Make a Map

Create a map you can view on the web, desktop and mobile devices.

Start ArcGIS Explorer Online

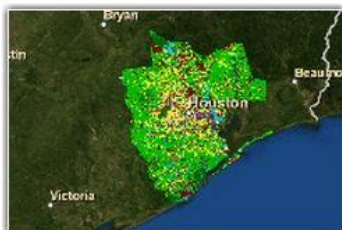
Use a rich application for working with ArcGIS online maps.

Learn More

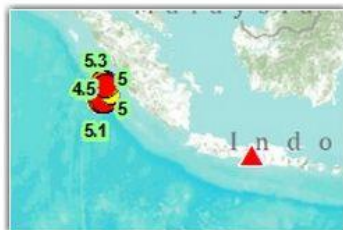
ArcGIS is an online system for using geographic information everywhere.



Featured Maps and Apps from the ArcGIS Community

[Maps](#)
[Web Apps](#)
[Mobile Apps](#)


H-GAC Regional Land Use
(ArcGIS for iPhone map)



Indonesia Earthquakes and
Volcanoes



Europe Basemap

Search for more maps or
click below to find the:

- Highest Rated
- Most Recent
- Most Viewed

What is a map?

Create your map and
save it online.



Supermarket Access Map



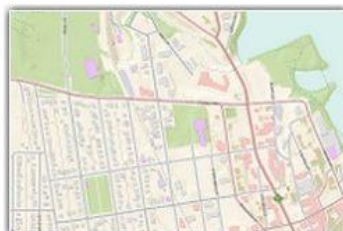
Global Distribution of
Seagrasses-Points Dataset



Tulsa, Oklahoma



USA Thunderstorm Probability
Forecasts



City of Nanaimo, British Columbia,
Canada




State of Utah



[New Map](#) [ArcGIS.com Home▼](#) [Help▼](#) [Sign In](#)

Details

 Add

 **Identify**

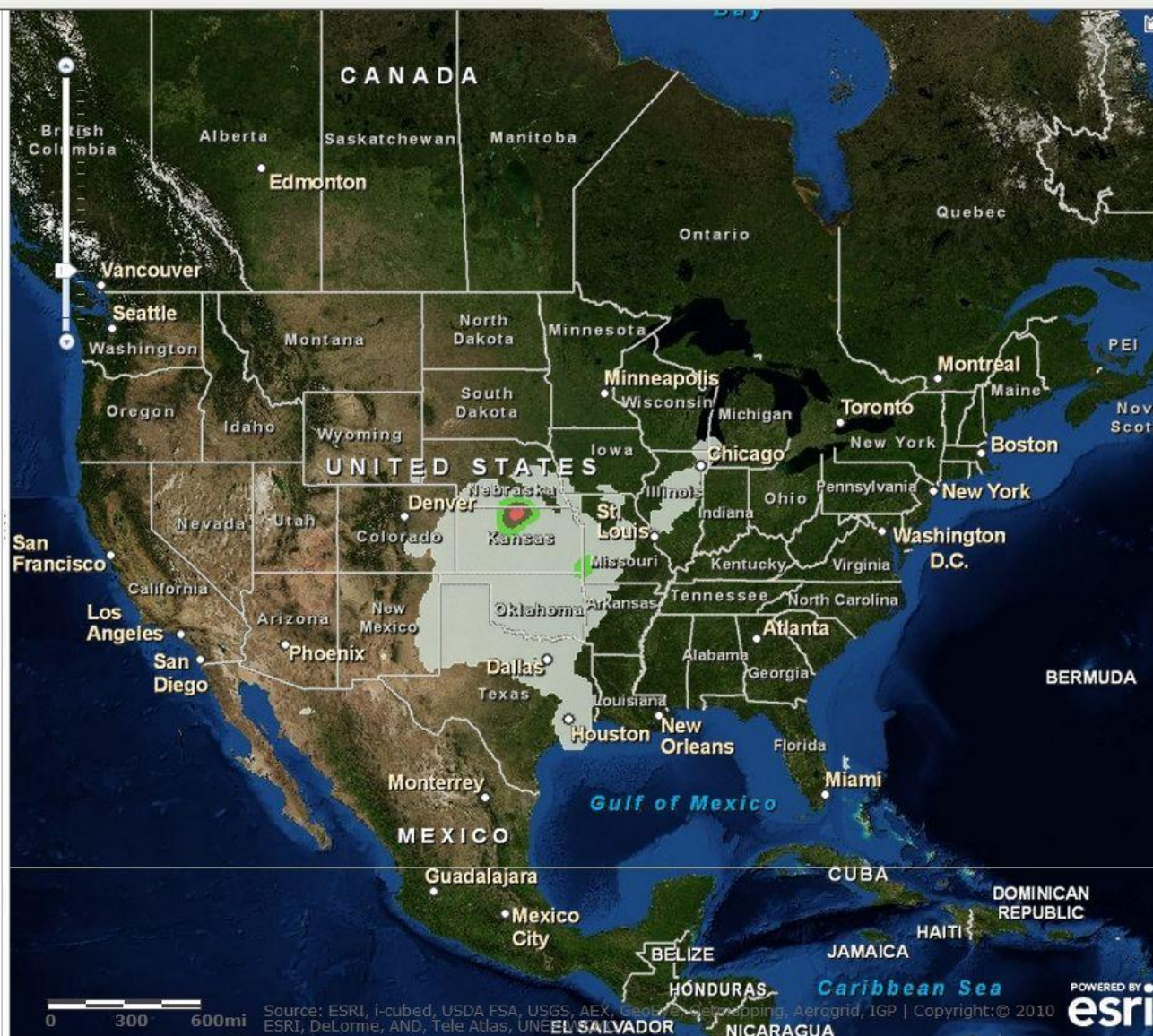
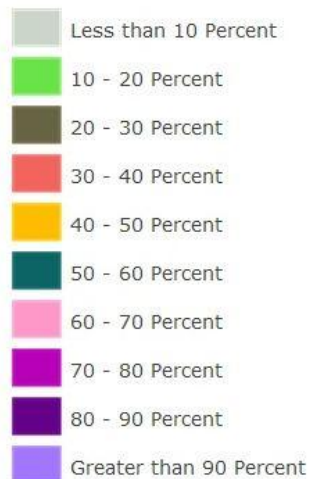
 Basemap Save ▼ Share Print

Find address or place



Thunderstorm Probability Forecasts

TSTM02 01hr 01





ArcGIS

USA Thunderstorm Probability Forecasts

New Map

ArcGIS.com Home

Help

Sign In

Details

Add

Identify

Basemap

Save

Share

Print

Find address or place

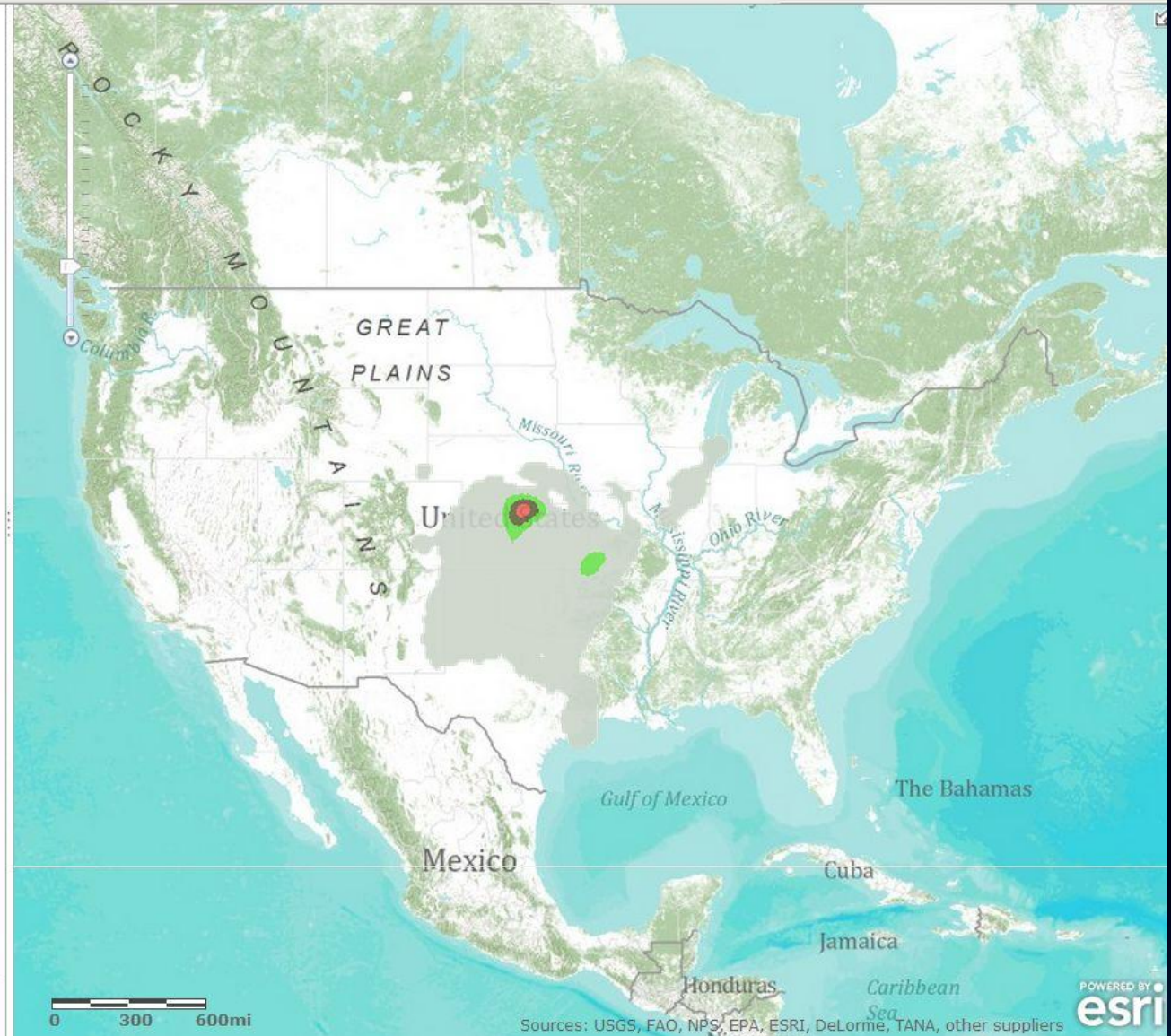
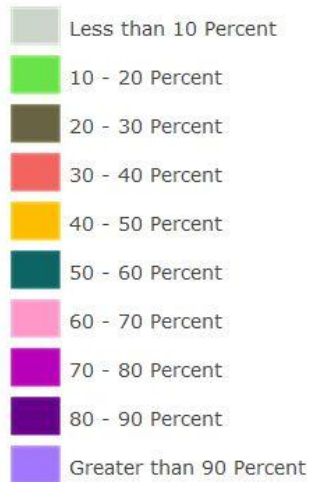


Legend

Thunderstorm Probability Forecasts

Right-Click Here for Details

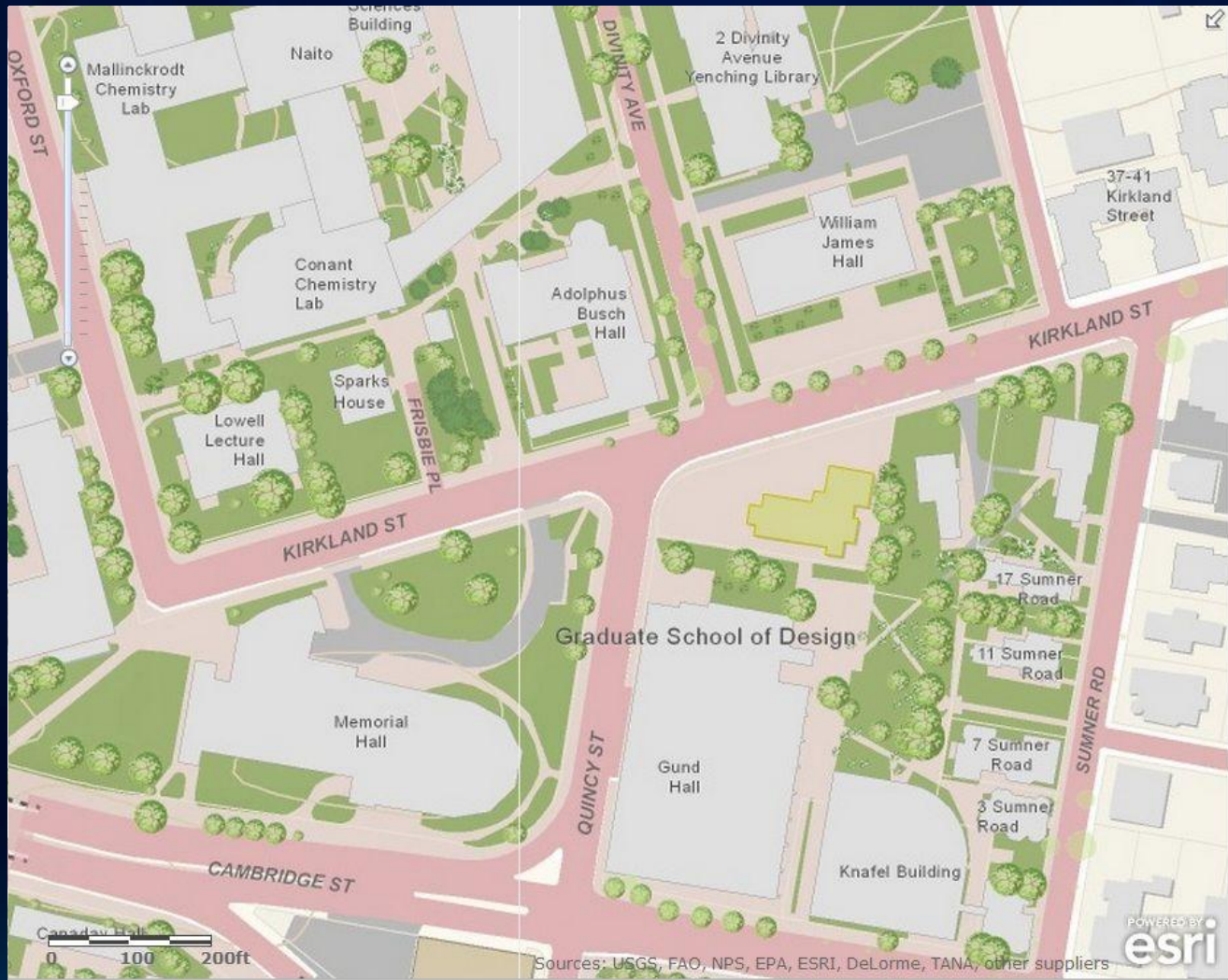
TSTM02_01hr_01



Community Basemaps

- Beautiful cartography designed as background context for data
- 20 zoom level image cache, from global to neighborhood
- Hosted free in the cloud by Esri
- Maintained by authoritative sources: city and county GIS agencies
- Updated monthly
- Authorities' vector data remains property of agency
- Authorities' vector data can't be downloaded
- Maps stored by Esri in image format only
- Basemaps shared under Creative Commons license
- Integral part of ArcGIS 10
- Can be viewed on Desktop, Web (arcgis.com) and iPhone/Android

Why join Community Maps?



Why join Community Maps?



Crowdsourcing and Community Maps

Thank you!